

CLAIMS

1.-55. (Canceled)

56. (Previously Presented) An apparatus comprising:

a substrate;

a first sub-grating formed on the substrate, the first sub-grating having a first grating period; and

a second sub-grating formed on the substrate parallel to the first sub-grating and separated from the first sub-grating by a selected non-zero distance, wherein the second sub-grating has a second grating period different than the first grating period.

57. (Previously Presented) The apparatus of claim 56 wherein the selected non-zero distance is positive.

58. (Previously Presented) The apparatus of claim 56 wherein the selected non-zero distance is negative, such that the first sub-grating and the second sub-grating overlap.

59. (Previously Presented) The apparatus of claim 56 wherein the substrate is planar.

60. (Previously Presented) The apparatus of claim 56 wherein the substrate is non-planar.

61. (Previously Presented) The apparatus of claim 56 wherein the first and second sub-gratings are transmissive gratings.

62. (Previously Presented) The apparatus of claim 56 wherein the first and second sub-gratings are reflective gratings.

63. (Previously Presented) A system comprising:

an optical carrier source to generate first and second optical carriers;

first and second modulators to modulate a first data signal onto the first optical carrier and a second data signal onto the second optical carrier;

a first segmented diffraction coupled to the first and second modulators, the segmented diffraction grating comprising:

a substrate,

a first sub-grating formed on the substrate, the first sub-grating having a first grating period, and

a second sub-grating formed on the substrate parallel to the first sub-grating and separated from the first sub-grating by a selected non-zero distance, wherein the second sub-grating has a second grating period different than the first grating period;

an optical transport;

a second segmented diffraction grating coupled to the optical transport, the second segmented diffraction grating having substantially the same construction as the first segmented diffraction grating; and

first and second optical detector coupled to the second segmented diffraction grating.

64. (Previously Presented) The system of claim 63 wherein the optical carrier source comprises a laser coupled to a beamsplitter.
65. (Previously Presented) The system of claim 63 wherein the selected non-zero distance is positive.
66. (Previously Presented) The system of claim 63 wherein the selected non-zero distance is negative, such that the first sub-grating and the second sub-grating overlap.
67. (Previously Presented) The system of claim 63 wherein the substrate is planar.
68. (Previously Presented) The system of claim 63 wherein the substrate is non-planar.
69. (Previously Presented) The system of claim 63 wherein the first and second sub-gratings are transmissive gratings.
70. (Previously Presented) The system of claim 63 wherein the first and second sub-gratings are reflective gratings.
71. (Previously Presented) The system of claim 63 wherein the optical transport includes an optical fiber.
- 72.-82. (Canceled)